furnish the same class of remains as those found outside. The personal ornaments are the most worthy of note. Besides bronze harp-shaped brooches of the common late Roman type, there were two in gilt-bronze, of a sigmoid shape, and adorned with a singularly beautiful pattern in blue, yellow, red, and green enamel. They are undoubtedly of a style purely Celtic. A harp-shaped brooch, Roman in design, is adorned with a most delicate pattern in blue and red enamel. Among the other brooches, one small oblong enamel is of a form hitherto unknown in brooches of this date, while a second consists of a small disc of bronze, with a plate soldered to it bearing a flamboyant ornament of Celtic design. There were also bronze gilt armlets. The whole evidence furnished by the personal ornaments in a word points to their Romano-Celtic origin, and it is not improbable that the principal seat of the art of enamelling was Yorkshire, the few enamels of that particular kind which have been found occurring, with one or two exceptions, in that county. The date of the occupation is shown by the coins, which range from Trajan down to the barbarous imitations of the coins of Tetricus. The latter were in circulation in the fourth and fifth centuries, and probably continued to be used in that portion of the Romano-Celtic kingdom of Strathclyde down to its final conquest by Eadberht in 756 A.D. The whole group of remains is precisely of the same character as those found around the ruins of Roman villas in Britain, and has probably been introduced by Romano-Celtic inhabitants who fled from their luxurious homes to take refuge from the ravages of the Picts or Scots, or of the Northumbrian Angles, who were pressing on that portion of the frontier of Strathclyde during the 5th, 6th, and 7th centuries. To suppose that people using articles of luxury such as those found in the cave would have chosen such an inclement abode, except under the pressure of necessity, is unreasonable.

At the entrance below the Romano-Celtic strata a layer of angular debris fallen from the cliff above, six feet thick, rested on a thick deposit of gray clay. At their point of junction a curious bone harpoon, a bone bead, the remains of red deer, horse and Celtic short-horn, and of bear, were found, which testified to the occupation of the cave by man long before the Romano-Celts used it as a refuge. The two flint flakes and two lumps of red ruddle found were probably obtained from this lower horizon, which, as the talus died away at the entrance of the cave, became confused inside with the Romano-Celtic stratum immediately above. It is probably of Neolithic age.

The grey clay underneath was homogeneous and very tenacious, and as the layer dipped away from the entrance, it must have been introduced by water flowing from the ravine into the cave. It was resolved to give up the attempt to fathom this bed of clay, after sinking a shaft twenty-five feet deep without any results.

The committee are desirous of exploring others of the many caves in the neighbourhood, if they can obtain support necessary to carry on a work which is of almost equal interest to the archæologist and to the historian.

NEW SPECIES OF MADREPORE

MR. W. SAVILLE KENT read a paper at a recent meeting of the Zoological Society on various new species of Madrepores, or Stony Corals, met with by himself while engaged upon arranging, naming, and cataloguing the fine series contained in the British Museum. Among the more interesting of these, commencing with the family of Turbinolidæ, Mr. Kent drew attention to a fine species of *Acanthocyathus* from Japan, more closely allied to a Maltese Miocene form (*A. Hastingsæ*) than to any known existing one; and also to a *Flabellum* allied to *F. Anthophyllites*, whose most remarkable feature rests in the phenomena connected with its reproduction by the process of gemmation, which invariably results in the destruction of the parent; the reproductive bud always originating within the margin of the parent calyx, which, in the course of its development, it splits to pieces. For this aberrant form Mr. Kent proposes the appropriate name of *Flabellum matricidum*. In the family of the Oculinidæ, which comprises the majority of the species introduced by Mr. Kent, are three new forms of *Allopora*, and numerous ones of *Stylaster*, *Distichopora* and *Amphihelia*, the first-named genus in particular containing a magnificent arborescent species, upwards of a foot in height, of a delicate rose colour, having a stem of such thickness and of such dense consistence that Mr. Kent is of the opinion that, if procurable in any quantity, it may eventually prove of high economic value, and even replace to some extent the well-known *Corallium rubrum*. The examination of these new varieties has enabled Mr. Kent to define more precisely the characters of *Allopora*, and its true distinctions from *Stylaster*, *Distichopora*, and other allied genera. In all, Mr. Kent introduces some twenty species as new to science.

SUBTERRANEAN ELECTRICAL DISTURBANCES

A FEW minutes before and after the earthquakes of the 17th March last powerful positive electrical currents were rushing towards England through the two Anglo-American telegraph cables, which are broken near Trinity Bay, Newfoundland. Mr. C. F. Varley, C.E., who informed us of the fact, broaches the novel speculation that some earthquakes may be due to subterranean lightning. He imagines that as the hot centre of the earth is approached, a layer of hot dried rock may be found which is an insulator, while the red hot mass lower down is a conductor. If this conjecture be true—and there is plausibility in it—then the world itself is an enormous Leyden jar, which only requires charging to a very moderate degree to be equal to the production of terrific explosive discharges.

The French Atlantic cable was disturbed at the same time, and so were many of the English land-lines, but the only observations as to the direction of the current were made by means of the Anglo-American telegraph cables.

A number of Mr. Varley's charts about earth-currents were published in the Government Blue Book of 1859-60, showing that the direction of these currents across England was in a very notable degree determined by the contour of the coast, and that the same auroral discharges would often produce currents at right angles to each other in direction, in different parts of Britain.

NOTES

A PROPOSAL has been made that certain Medical Schools on the north and south sides of the river should be amalgamated, in order that, by concentration of power, the teaching shall be made more efficient than it is at present, the teachers being able to devote themselves more unreservedly to their duties than they possibly can do under existing arrangements. The absolute necessity of some such arrangement as this is obvious.

MR. RUTHERFORD and M. Janssen, to whose labours cosmical physics owes so much, are both now in this country, the former, we regret to learn, in consequence of a peremptory order to cease work for a time. At the last meeting of the Royal Astronomical Society, Mr. Rutherford exhibited his exquisite photograph of the Pleiades, which represents the last important outcome of celestial photography. It appears that M. Janssen's observatory for solar research, which had been erected in one of the pavilions of the Palace of St. Cloud, at the cost of the Emperor, was one of the first buildings to be entirely destroyed by the German fire.

THE Royal Commission on Scientific Instruction and the Advancement of Science will resume its sittings on the 25th instant.

THE Marine Aquarium at the Crystal Palace is beginning to take form, thanks to the energy of Mr. Lloyd. About one-third of the 700 tons (= 150,000 gallons) of the sea water required is already in the tanks, but the steam engines and pumps are not yet regularly at work. When they are, and some of the marine animals of which at present the aquarium is quite destitute shall have been received, we hope to give a description of an enterprise of which great scientific use can certainly be made.

WE learn from the *Chemical News* that the Council of the Federal Swiss Polytechnic School at Zürich has appointed Dr. Emile Kopp as Professor of Technology in the room of the late lamented Dr. Bolley. Professor Kopp's merits, during the time he has held the Professorship at the Institute Superiore, at Turin, have been gracefully acknowledged by the Italian Government, it having pleased H.M. King Victor Emmanuel to grant to Dr. Kopp the dignity of Commandeur de l'Ordre Equestre de la Couronne d'Italie. We sincerely congratulate Dr. Kopp, and no less so the Government of the Helvetian Republic, on having secured the services of a man so eminently well suited as Dr. Kopp to the important Professorship vacant by the demise of Dr. Bolley.

THE French Academy of Sciences held a short sitting on April 3, M. Faye, who usually occupies the chair, being, however, absent. The principal subject of interest was a sharp passage of arms between M. Delaunay and M. St. Claire Deville respecting the Montsouris Observatory. The Commune having ordered the arrest of M. Henri St. Claire Deville, the Professor of Chemistry in the University, as a hostage, he has been compelled to make his escape to Versailles, together with his brother, the meteorologist. M. Leverrier is also now at Versailles. Dr. Bersigny, who conducted the observations during the Prussian occupation, will be the director of the meteorological observations conducted by the Government.

THE second *soirée* of the Royal Society takes place on Saturday evening next, and that of the Linnean Society on Wednesday the 26th inst.

WE understand that there is likely to be a contest for the seat in the Senate of the University of London, vacant by the death of Prof. Miller. The nomination would, in accordance with previous practice, be left this time to the Faculties of Science and Medicine, and their representative is Dr. Parkes, F.R.S., of Netley, who is also supported by many graduates in Arts.

THE course of lectures during the Easter term at the Gresham College, by Dr. E. Symes Thompson, Gresham Professor of Medicine, will be on April 21, 22, and 24, the subjects being, "On the Small-pox Epidemic," "On the Organs of Respiration," and "On the Organs of Circulation." These will be followed by two lectures on May 24 and 25, "On the Water-supply of London," and "On the Heart and Lungs in Health and Disease. As usual the lectures are free to the public.

IT is rumoured that a College for Women is to be established at Cambridge, in order to give the students the advantage of attending the lectures, &c., of the University Professors.

THE following are places of Comet I., 1871, discovered by Dr. Winnecke, for the dates named:—1871, April 7, $9^h\ 50^m\ 31^s$, M. T. Karlsruhe; AR app. ☄ = $2^h\ 27^m\ 14^s{\cdot}59$ Decl. app. ☄ = $+\ 53^\circ\ 53'\ 8''{\cdot}1$. April 8, $9^h\ 39^m\ 43^s$, M. T. Altona; AR app. = $2^h\ 32^m\ 8^s{\cdot}21$; Decl. app. = $+53^\circ\ 24'\ 41''{\cdot}1$. April 9, $9^h\ 56^m\ 25^s$, M. T. Altona; AR app. = $2^h\ 37^m\ 2^s{\cdot}50$ Decl. app. = $+52^\circ$, $55'\ 31''{\cdot}0$.

IN a recent number of Poggendorff's *Annalen*, Dr. Weinhold states that the black absorption line of sodium can be easily obtained by a simple process. The usual method has been to interpose a flame, coloured with chloride of sodium, between a strong light, such as the electric light, and the slit of a spectroscope. The source of light now proposed by M. Weinhold is an ordinary petroleum lamp; the light is allowed to pass through a slit directly on to a prism, and a spirit lamp flame, intensely coloured with chloride of sodium, interposed between the prism and the eye, so as to cover the entire spectrum;—the black absorption line will then be seen distinctly. If the flame coloured with sodium is placed in front of the slit, the bright yellow line will be seen as usual. M. Weinhold has not been successful in using this method with an ordinary spectroscope fitted with telescopes, on account of various practical difficulties.

M. GABRIEL MORTELLET, the sub-conservator of the St. Germain Museum, wishes us to correct a statement which seemed to imply that it was open during the Prussian siege. This was not the case, although the works were not interrupted.

THE temperature of February and March shows a remarkable contrast to that of the two preceding months. Mr. Glaisher's tables, published in the *Gardener's Chronicle*, show that at Blackheath on forty-seven days during these two months the temperature was above the average, while it was below the average on only twelve days, the mean being 3°·55 above that of the same period during the last fifty years. The disturbance of equilibrium caused by the low temperature of December and January has thus almost been restored. During Feburary the thermometer only fell to the freezing-point on five nights, and during March east winds prevailed to only a very moderate extent, showing a very marked contrast to the same month last year. The depression of temperature which commenced on March 28 continued to April 11, when there was a sudden rise from 4°·1 below the average to 11°·4 above the mean on April 12.

THE publication is announced of a new series of the "Messenger of Mathematics." It will be edited by Messrs. W. Allen Whitworth, C. Taylor, W. J. Lewis, R. Pendlebury, and J. W. L. Glaisher, and the first number will be published by Messrs. Macmillan on May 1st. The editors consider that the "Messenger" has, during the five years it has already existed, amply fulfilled its object of encouraging original research in the three Universities among junior graduates and others, although no inconsiderable portion of its contents has been supplied by writers of established reputation, who rank amongst the foremost mathematicians of the age; and it is this fact in particular which now induces them to appeal directly to the mathematical world at large, and to remove from their title-page any words which might be supposed to limit the sphere of usefulness of the "Messenger." They are therefore prepared to receive communications from every available source, and have already to announce papers, forwarded or promised, by Prof. Cayley, Chief Justice Cockle, Mr. Routh, Mr. Esson, and others. Besides original papers, it is intended to insert brief notices of select articles or treatises on mathematical subjects, as well as short accounts of the proceedings of societies at home or abroad.

THE second series of "Science Lectures for the People," delivered in the Hulme Town Hall, the first of which we have already had occasion to notice in terms of commendation, contains reports of lectures by Professor W. C. Williamson on "The Natural History of Paving-Stones," Dr. W. B. Carpenter on "The Temperature and Animal Life of the Deep Sea,' Mr. A. H. Green "More about Coal," and Mr. Norman Lockyer "On the Sun." It is published by Mr. John Heywood, Deansgate, Manchester, and Messrs. Simpkin, Marshall and Co., London.

The second part of the fifth volume of the "Proceedings of the Bristol Naturalists' Society," from May to December 1870, does not contain much original matter. The longest paper, by Messrs. Sorby and Butler, "On the Structure of Rubies, Sapphires, Diamonds, and other Minerals," has already appeared in the "Proceedings of the Royal Society." The paper "On the Natural History of Filey and its Neighbourhood," however excellent in itself, hardly appears to us in place among the proceedings of a local society on the other side of England. Mr. C. F. Ravis contributes a useful paper, "On Denudation, especially as exhibited in the Valley of the Avon," and there are some good local geological and entomological notes. The zoological and botanical sections present no report.

Colonel Haig, R.E., of the Godavery Navigation Works, has found coal near Dumagudlom, in the Madras Presidency, 130 miles from Kokonada. It is not so good as English coal for locomotive purposes, but is good enough for welding in the Government workshops.

Mr. Mallet, of the Indian Geological Survey, has been examining Aden with a view to water supply. He considers there is no hope from Artesian wells, but recommends water to be brought from wells near Mahilla at the Sheikh Othman aqueduct.

The culture of bamboo for paper making and other purposes is being promoted by the Government of Central India. The Indian Government is buying land in the hill district of the Neilgheries for a spice plantation. Col. Boddam has proposed the cultivation of the sunflower in Mysore. It is very successful in France. Government has sent out six more Scotch gardeners for experimental cotton growing. These men have answered very well.

The Broom (*Sarothamnus scoparius*) is extremely abundant in Madeira, but is supposed to have been originally introduced to the island. It is now sown extensively on the mountains for the purpose of being cut down for firing, or burnt on the spot every five to seven years to fertilise the ground. The twigs and more slender branches are also used commonly as withs for binding bundles of faggots, brushwood, fern, &c.; and numbers of country people, especially young girls and children, residing within reach of Funchal, gain a livelihood by bringing daily into the town bundles of broom for use in heating ovens, &c. The fine and delicate basket-work peculiar to Madeira is manufactured from the slender peeled twigs of this plant. Mr. Lowe speaks of a variety with pure white flowers which occurs on this island.

The Apocynaceæ are noted for their poisonous properties, and one of the most interesting plants of the order is *Cerbera odollam*. It is a tree about 20ft. high, growing about Malabar and Travancore, and produces a drupe-like fruit as large as a fine mango. The inner shell of the fruit, after removing the green rind, is composed of a mass of reticulated woody fibres, and when dry is not much unlike a ball of coarse, dirty string. These fruits are said to be used by the natives in Travancore to poison dogs, for this purpose they are taken when green and covered with sugar or some sweet substance, by which the dogs are tempted to eat them. The effect of the poison is to cause the teeth of the animals to become loose or to fall out before death ensues.

A new kind of stuffing for mattresses appears to be coming in vogue, for we learn from the *Journal of Applied Chemistry*, "that sponge, dipped in glycerine and well pressed, remains elastic, and can be used for mattresses, cushions, and general upholstery," and we further learn that "sponge mattresses prepared in this way, are now finding great favour."

The *Pharmaceutical Journal* draws attention to an article which originally appeared in the *American Journal of Microscopy*, on the value of the microscope to the pharmacist in the detection of parasitic animalculæ or fungi in drugs of vegetable origin. We all know that leaves, roots, and seeds deteriorate very much by being kept any length of time, therefore the remarks of the author are of the utmost importance to mankind generally. He says "that it is notorious that the most carefully prepared tinctures and extracts of certain drugs are sometimes devoid of medicinal power. It has been supposed that certain volatile constituents escape from the substances from which such tinctures are prepared, but of this we have no certain proof. Why is it that the leaves of belladonna may, in some instances, be kept for years, and at the end of that period be capable of yielding a reliable preparation, while other specimens, when kept only a few months, are worthless? It must be because of some destructive process going on in the substance, which cannot be discovered with the naked eye." The hints which follow are even worth the attention of those upon whom we depend for our medicinal preparations. "The pharmacist should first learn to recognise the natural healthy appearance, under the microscope, of all the vegetable substances he works upon; then he should subject a specimen of every substance he prepares to a careful examination, and if he discovers the presence of vegetable or animal parasites, such substances should be rejected. The world is flooded with inert medicinal preparations. Doubtless many such preparations are made worthless by improper methods of manufacture; but it is my opinion that in many instances their worthlessness is due to the fact that the substances used have been injured by certain agencies which could have been discovered by the intelligent use of the microscope."

The *Eucalypti*, or Gum-trees of Australia, are well-known for their hard wood as well as for the oils and gums yielded by many of them. Some of the species have been introduced and successfully grown in different parts of Europe, and their products may become, ere long, recognised articles of import. At the present time large quantities of sticks of a species of *Eucalyptus* are imported into England from Algeria, and are made into walking sticks. During the Great Exhibition in Paris in 1867, the leaves of *Eucalyptus globulus* were made into cigars, and recommended as being very efficient in aiding digestion. We now learn from the *Gardeners' Chronicle* that the leaves of a species of *Eucalyptus* have been recently used on the Continent in place of lint, the leaves being merely laid on the wounds. "Their balsamic nature not only cures, but, after a few hours, all unpleasant odour ceases."

The prickly poppy (*Argemone mexicana*), originally from the New World, has become naturalised throughout the tropics and sub-tropics of both hemispheres. In the West Indies, where it is very abundant, it is called *Fico del inferno*, the reason for this name being, according to Gerarde, "because of his fruit, which doth much resemble a figge in shape and bignesse, but so full of sharpe and venemous prickles that whosoever had one of them in his throte doubtless it would send him packing either to heaven or to hell." Barham, however, gives, as an explanation, a statement that the seeds, "being much stronger than opium," are "enough to send any that should take them wilfully to *inferno*;" but this is much exaggerated. In India it is now abundantly naturalised in the eastern part of the Punjab, and is spreading over fresh districts year by year. It is not altogether a useless addition to the Indian flora, as near Delhi an oil is extracted from the seeds which is used for burning, as well as in the treatment of chronic sores and eruptions.